

Remarks:

1. Objection to the Claims

Claim 10 is objected to because it contains a typographical error. Applicants amended claim 10 in accordance with the Examiner's helpful suggestion. Specifically, Applicants' deleted the extraneous "are." This amendment is made only to correct an informality and does not otherwise narrow the claim scope. Thus, Applicants respectfully request the Examiner to withdraw the objection to claim 10.

2. Rejections.

Claims 1-4, 10, and 11 stand rejected under 35 U.S.C. § 103(a), as allegedly rendered obvious by Patent No. JP40318527A to Hitoshi et al. ("Hitoshi") in view of Patent No. U.S. 5,067,235 to Kato et al. ("Kato"), and claims 5-9 stand rejected under 35 U.S.C. § 103(a), as allegedly rendered obvious by Hitoshi in view of Kato, and further in view of either Published Patent Application No. US 2002/0144808 A1 to Jones or Published Patent Application No. US 2002/0119335 A1 to Nozaki. Applicants respectfully traverse.

3. Obviousness Rejections.

In order to establish a prima facie case for obviousness, the Office Action must fulfill three (3) criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to those of ordinary skill in the art, to modify the primary reference as proposed by the Office Action. Second, there must be a reasonable expectation of success. Third, the prior art references must disclose or suggest all the claim limitations. MPEP 2143. In view of the foregoing amendments and the following remarks, Applicants maintain that the Office Action fails to establish a prima facie case of obviousness with respect to claims 1, 2, and 4-11.

a. Claim 1

As noted above, claim 1 stands rejected as allegedly being rendered obvious by Hitoshi in view of Kato. The Office Action asserts that the combination of Hitoshi with Kato discloses each and every feature of the claimed invention. See Office Action, Page 3, Lines 5-9. Applicants respectfully traverse.

Independent claim 1, as amended, recites “said introduction tank is formed of a first material, said discharge tank is formed of a second material, and a heat conductivity of a first material is greater than a heat conductivity of a second material.”

In contrast, Hitoshi discloses a pre-cooler having an inlet header 7 and an outlet header 10, which are connected by a cooling pipe including a stainless steel high-temperature cooling side 8 and a copper low-temperature cooling side 9. The less-expensive copper is used in low-temperature cooling side 9 to reduce manufacturing cost and maintain thermal expansion on both sides 8,9 of the cooling pipe by accounting for the decreasing temperature of the compressed air as it passes through the pre-cooler. Copper, however, is a superior thermal conductor ($\lambda=401$ at 300°K), while stainless steel is an inferior metallic thermal conductor ($\lambda=14$ at 300°K). Consequently, Hitoshi fails to disclose at least “said introduction tank is formed of a first material, said discharge tank is formed of a second material, and a heat conductivity of a first material is greater than a heat conductivity of a second material.”

Moreover, the art of record may not be relied upon to overcome the above-noted deficiencies of Hitoshi. A reference cannot be modified to establish a prima facie case of obviousness if the modification would change the reference’s principle of operation. See MPEP 2143.01. Hitoshi discloses that copper is used for low-temperature cooling side 9 because its thermal expansion, when exposed to lower-temperature compressed air, is similar to the less heat

conductive stainless steel used for high-temperature cooling side 8 that is exposed to the higher-temperature compressed air. Hitoshi further praises this arrangement as allegedly reducing thermal stress in the pre-cooler serving as a heat exchanger. Thus, Hitoshi may not be modified to change this principle of operation.

Accordingly, the Office Action fails to establish a prima facie case of obviousness because the art of record, whether taken alone or in combination, fails to disclose each and every feature of the claimed invention as a whole. Therefore, Applicants respectfully request the Examiner to withdraw the obviousness rejection of claim 1.

b. Claims 2 and 4-11.

Claims 2 and 4-11 depend from amended, independent claim 1. MPEP 2143.03 states that “[i]f an independent claim is non-obvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious.” Therefore, we respectfully request the Examiner to withdraw the obviousness rejection of claims 2 and 4-11.

Conclusion:

Applicants maintain that the above-captioned patent application is in condition for allowance, and such disposition is earnestly solicited. If the Examiner believes that the prosecution of this application may be furthered by discussing the application, in person or by telephone, with Applicants' representative, we would welcome the opportunity to do so.

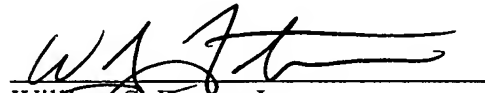
Applicants believe that no fees are due as a result of this responsive amendment. Nevertheless, in the event of any variance between the fees determined by Applicants and the fees determined by the U.S. Patent and Trademark Office, please charge or credit any such variance to the undersigned's **Deposit Account No. 02-0375**.

Respectfully submitted,
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